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FORT COLLINS, CO 80527-2400

EXAMINER
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KAO, WEI PO ERIC

ART UNIT	PAPER NUMBER
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2616

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ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	Application No. 10/506,882	Applicant(s) CHEUNG ET AL.	
	Examiner Wei-po Kao	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Specification***

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Objections***

3. Claim 19 is objected to under 37 CFR 1.75 because of the following informalities:

The claimed term, "said communication link," of claim 19 line 9 seems to refer to one of the two communication links mentioned in line 2. It is suggested to expressly disclose which of the two communication links.

***Claim Rejection - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 6, 7, 16, 17, 19, 20, 32 and 33 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For Claim 6, the claimed terms, "said packet loss," of line 9, "said loss," of line 10 and "said loss," of line 11 have no antecedent basis.

For Claim 16, the claimed terms, "said encoding device," of lines 2 and 4 and "said packet analysis apparatus," have no antecedent basis.

For Claim 17, the claimed terms, "said encoding device," of lines 2 and 4 and "said packet analysis apparatus," have no antecedent basis.

For Claim 19, the claimed term, "said network," of line 6 have no antecedent basis.

For Claim 32, the claimed terms, "said lost packet," of line 10 and "said loss," of line 13 have no antecedent basis.

For Claim 33, the claimed terms, "said wireless terminal," of line 5 have no antecedent basis.

The Claims 7 and 20 are rejected as being dependent of the rejected claims 6 and 19.

### ***Claim Rejection - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in - (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language]

7. Claims 1, 3, 8, 9, 10, 11, 27 and 29 are rejected under 35 U.S.C. 102 (e) as being anticipated by Mizutani et al, US Publication No. 20020138846.

Regarding Claim 1, Mizutani et al teach that a **media streaming delivery system** (see **Abstract**), **comprising: a media delivery apparatus for transmitting a media stream in packets to a network according to a real time transfer protocol** (see Figure 1 Element 20/21, [0032-0033] [00441]); **a relay apparatus connected to the network for transmitting the media stream to a communication link with a large delay** (see Figure 1 Element 30, [0032] [0036-0039] [0052] i.e. figure 1 shows at least a communication link to transfer media stream or media quality information between the two devices; when there is packet loss or quality degradation, there is delay; this is especially true when the communication link is a wireless link, which is commonly known as a less stable transmission medium); **and packet analysis means for monitoring the packet arriving at the relay apparatus and transmitting feedback information indicating a status of the network to the media delivery apparatus** (see Figure 1 Element 30/33/32, [0038] Line 4-8, [0039]).

Regarding Claim 3, Mizutani et al further teach that **the delivery system, wherein the feedback information is a sequence number of a packet lost from the media stream** (see Figure Element 30/33, Figure 4, [0049-0050] [0052]).

Regarding Claim 8, Mizutani et al teach that **a packet analysis apparatus, comprising: detecting means connected to a network for receiving a packet transmitted in the network and detecting a media stream (see Figure 1 Element 30/31, [0032-0036]); and packet analysis means for detecting loss of a packet in the detected media stream and performing feedback to a source of the media stream (see Figure 1 Element 30/33/32, [0038] Line 4-8, [0039]).**

Regarding Claim 9, Mizutani et al further teach that **a network relay apparatus comprising the packet analysis apparatus (see Figure 1 Element 30), wherein the network relay apparatus sends to the source identification information of a packet received from the network (see [0038] [0049] i.e. sequence number) and sent to a communication link different from the network (see Figure 1 Element 30/30a, [0032] Line 8-10 i.e. a different network is formed by plurality of terminal devices).**

Regarding Claim 10, Mizutani et al further teach that **the relay apparatus, wherein detection of the packet loss is performed based on sequence numbers included in headers of a sequence of packets constituting the media stream (see [0038-0048]).**

Regarding Claim 11, Mizutani et al teach that **a media delivery apparatus used for delivering a media stream comprising a sequence of packets (see Figure 1 Element 20/21, [0032-0033]), wherein the apparatus is arranged for, in response to feedback relating to packet loss on a delivery path of the media stream, modifying the media stream so as to reduce an influence**

**of the loss** (see Figure 5, [0053-0067] i.e. a modified said media stream is now including only the lost sequence).

Regarding Claim 27, it is a method claim corresponding to the system claim 1, and therefore rejected under the same reason set forth in the same section of claim 1 in this paragraph.

Regarding Claim 29, it is a method claim corresponding to the system claim 3, and therefore rejected under the same reason set forth in the same section of claim 3 in this paragraph.

### ***Claim Rejection - 35 USC § 103***

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).



9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2, 4, 5, 28, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al, US Publication No. 20020138846 in view of Cheung et al, U.S. Patent No 5812531.

Regarding Claim 2, Mizutani et al teach that **the delivery system, wherein the communication link is a wireless link** (see Figure 1 Elements 30a-mobile terminal, [0032]). However, Mizutani et al do not specifically disclose that **the feedback information is an acknowledge response sent to the relay apparatus each time a packet of the media stream arrives**. Cheung et al from the same field of endeavor disclose that **the feedback information is an acknowledge response sent to the relay apparatus each time a packet of the media stream arrives** (see Column 9 Line 30-38). At the time of the invention, it would have been obvious to a person ordinary skill in the art to include acknowledgements to each packet in the feedback. The rationale would have been that it is desired to maintain a stable communication condition in an often-not-stable wireless communication medium.

Regarding Claim 4, Mizutani et al further teach that **the delivery system, wherein the media delivery apparatus is arranged to modify the media stream based on the feedback information** (see [0053-0057]).

Regarding Claim 5, Mizutani et al further teach that **the delivery system, wherein the communication link with a large delay is a wireless link** (see Figure 1 Element 30a-mobile

terminal, [0032] Line 7 i.e. if the receiving terminal is a mobile device, the communication link must be a wireless link).

Regarding Claim 28, it is a method claim corresponding to the system claim 2, and therefore rejected under the same reason set forth in the same section of claim 2 in this paragraph.

Regarding Claim 30, it is a method claim corresponding to the system claim 4, and therefore rejected under the same reason set forth in the same section of claim 4 in this paragraph.

Regarding Claim 31, it is a method claim corresponding to the system claim 5, and therefore rejected under the same reason set forth in the same section of claim 5 in this paragraph.

12. Claims 6, 7, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al, US Publication No. 20020138846 and Cheung et al, U.S. Patent No 5812531 as applied to claim 4 above, and further in view of Curet et al U.S. Patent No 6823010.

Regarding Claim 6, Mizutani et al and Cheung et al teach that **the system, wherein the media stream is a video including a sequence of I-pictures and P-pictures** (see Mizutani et al, [0070]); and wherein the media delivery apparatus comprises: a storage for storing a plurality of media streams for one video, including at least a first media stream containing

I-pictures in a first arrangement and a second media stream containing I-pictures in a second arrangement which is different from the first arrangement (see Mizutani et al, Figure 5 Element 20/24, Figure 9, [0056] [0071] i.e. it is obvious to see that a media streaming providing system like Mizutani's is able to provide more than one piece of MPEG video or program, thus more than one arrangement of I-pictures in different media streams is possible). However, Mizutani et al and Cheung et al do not teach that switching means for, in response to determination of the packet loss, for the destination for which the loss has occurred, selecting a media stream in which a first I-picture after the picture in the lost packet appears earliest among the plurality of media streams, and switching the media stream to be sent to the selected media stream. Curet et al from the same field of endeavor teach that switching means for, in response to determination of the packet loss, for the destination for which the loss has occurred, selecting a media stream in which a first I-picture after the picture in the lost packet appears earliest among the plurality of media streams, and switching the media stream to be sent to the selected media stream (see Column 1 Line 48-60, Column 2 Line 40-50). At the time of the invention, it would have been obvious to a person ordinary skill in the art to switch the media stream to be sent with a leading I-picture after a disconnection of media stream transmission. The rationale would have been that since conventionally an I-picture represents a beginning of a MPEG media stream, it makes sense to transmit a complete new media stream with a leading I-picture after a disconnection of the transmission in order to provide a rather smooth transaction.

Regarding Claim 7, Mizutani et al and Cheung et al teach that **the system, wherein the media stream is a video including a sequence of I-pictures and P-pictures** (see Mizutani et al, [0070]); **wherein the media delivery apparatus comprises an encoding device for generating the media stream** (see Mizutani et al, Figure 5 Element 20/25, [0058] [0063] i.e. packetizing is an encoding process). However, Mizutani et al and Cheung et al do not teach that **the encoding device is arranged to generate a media stream starting with an I-picture in response to determination of the packet loss**. Curet et al from the same field of endeavor teach that **the encoding device is arranged to generate a media stream starting with an I-picture in response to determination of the packet loss** (see Column 2 Line 40-50). At the time of the invention, it would have been obvious to a person ordinary skill in the art to generate a media stream with a leading I-picture. The rationale would have been that since conventionally an I-picture represents a beginning of a MPEG media stream, it makes sense to transmit a complete new media stream with a leading I-picture after a disconnection of the transmission in order to provide a rather smooth transaction.

Regarding Claim 32, it is a method claim corresponding to the system claim 6, and therefore rejected under the same reason set forth in the same section of claim 6 in this paragraph.

Regarding Claim 33, it is a method claim corresponding to the system claim 7, and therefore rejected under the same reason set forth in the same section of claim 7 in this paragraph.

13. Claims 12, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al, US Publication No. 20020138846 in view of Curet et al U.S. Patent No 6823010.

Regarding Claim 12, Mizutani et al teach that **the system, wherein the media stream is a video including a sequence of I-pictures and P-pictures (see [0070]); wherein the media delivery apparatus comprises an encoding device for generating the media stream (see Figure 5 Element 20/25, [0058] [0063] i.e. packetizing is an encoding process).** However, Mizutani et al do not teach that **the encoding device is arranged to generate a media stream starting with an I-picture in response to determination of the packet loss.** Curet et al from the same field of endeavor teach that **the encoding device is arranged to generate a media stream starting with an I-picture in response to determination of the packet loss (see Column 2 Line 40-50).** At the time of the invention, it would have been obvious to a person ordinary skill in the art to generate a media stream with a leading I-picture. The rationale would have been that since conventionally an I-picture represents a beginning of a MPEG media stream, it makes sense to transmit a complete new media stream with a leading I-picture after a disconnection of the transmission in order to provide a rather smooth transaction.

Regarding Claim 15, Mizutani et al and Cheung et al teach that **the system, wherein the media stream is a video including a sequence of I-pictures and P-pictures (see Mizutani et al, [0070]); and wherein the media delivery apparatus comprises: a storage for storing a plurality of media streams for one video, including at least a first media stream containing**

I-pictures in a first arrangement and a second media stream containing I-pictures in a second arrangement which is different from the first arrangement (see Mizutani et al, Figure 5 Element 20/24, Figure 9, [0056] [0071] i.e. it is obvious to see that a media streaming providing system like Mizutani's is able to provide more than one piece of MPEG video or program, thus more than one arrangement of I-pictures in different media streams is possible). However, Mizutani et al and Cheung et al do not teach that switching means for, in response to determination of the packet loss, for the destination for which the loss has occurred, selecting a media stream in which a first I-picture after the picture in the lost packet appears earliest among the plurality of media streams, and switching the media stream to be sent to the selected media stream. Curet et al from the same field of endeavor teach that switching means for, in response to determination of the packet loss, for the destination for which the loss has occurred, selecting a media stream in which a first I-picture after the picture in the lost packet appears earliest among the plurality of media streams, and switching the media stream to be sent to the selected media stream (see Column 1 Line 48-60, Column 2 Line 40-50). At the time of the invention, it would have been obvious to a person ordinary skill in the art to switch the media stream to be sent with a leading I-picture after a disconnection of media stream transmission. The rationale would have been that since conventionally an I-picture represents a beginning of a MPEG media stream, it makes sense to transmit a complete new media stream with a leading I-picture after a disconnection of the transmission in order to provide a rather smooth transaction.

Regarding Claim 17, Curet et al further teach that **the media delivery apparatus according to claim 15, wherein the encoding device is arranged such that, in response to detection of the packet loss based on feedback information from the packet analysis apparatus, the encoding device transmits a media stream starting with an I-picture to the destination for which the loss has occurred** (see Column 2 Line 40-50). At the time of the invention, it would have been obvious to a person ordinary skill in the art to generate a media stream with a leading I-picture. The rationale would have been that since conventionally an I-picture represents a beginning of a MPEG media stream, it makes sense to transmit a complete new media stream with a leading I-picture after a disconnection of the transmission in order to provide a rather smooth transaction.

14. Claims 13, 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al, US Publication No. 20020138846 and Curet et al U.S. Patent No 6823010 as applied to claim 12 above, and further in view of Itoh et al U.S. Publication No 20020191594.

Regarding claim 13, Mizutani et al and Curet et al teach all the limitations in claim 12 except that **the media delivery apparatus, wherein the feedback relating to the packet loss is feedback relating to the packet loss observed at a point where the delivery path switches from a link with a small delay to a link with a large delay**. Itoh et al from the same field of endeavor teach that **the media delivery apparatus, wherein the feedback relating to the packet loss is feedback relating to the packet loss observed at a point where the delivery**



**path switches from a link with a small delay to a link with a large delay** (see Abstract, Figure 6, [0015-0016]). At the time of the invention, it would have been obvious to a person ordinary skill in the art to report the packet loss during the transaction from a small delay communication link to a large delay communication link. The rationale would have been that while it is inevitable a disconnection/packet loss is created when switching from a small delay link to a large delay link, a feedback reporting not only the packet loss condition in a large delay link but also the packet loss due the transaction from a small delay link yield a more robust mechanism for the packet generating/delivering to provide a smooth transmission service.

Regarding Claim 14, Itoh et al further disclose that **the media delivery apparatus, wherein the link with a small delay is a wired link and the link with a large delay is a wireless link** (it is commonly known fact in that art that a wireless link is a less stable communication medium compared to a wired link; in another words a wireless link has the characteristics of causing a data traffic to delay much more easily than a wired link).

Regarding Claim 18, Mizutani et al further disclose that **the media delivery apparatus according to claim 14, wherein the media delivery apparatus performs the retransmission of a packet based on the feedback information relating to a packet loss** (see [0057-0064]).

15. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al, US Publication No. 20020138846 and Curet et al U.S. Patent No 6823010 as applied to claim 15 above, and further in view of Shimoyama et al U.S. Patent No 6643496.

Regarding claim 16, Mizutani et al and Curet et al teach all the limitations in claim 15 except that **the media delivery apparatus, wherein the encoding device is arranged such that, in response to detection of a packet loss based on feedback information from the packet analysis apparatus, the encoding device increases a frequency of I-pictures at least for a media stream transmitted to a destination for which the loss has occurred.** Shimoyama et al from the same field of endeavor teach that **the media delivery apparatus, wherein the encoding device is arranged such that, in response to detection of a packet loss based on feedback information from the packet analysis apparatus, the encoding device increases a frequency of I-pictures at least for a media stream transmitted to a destination for which the loss has occurred** (see Abstract, the frequency of I-pictures increases along with the transmission rate).

16. Claims 19, 20, 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al, US Publication No. 20020138846 in view of Cheung et al U.S. Patent No 5812531 and Shimoyama et al U.S. Patent No 6643496.

Regarding Claim 19, Mizutani et al teach that **a relay apparatus for connection a communication link** (see Figure 1 Element 30, [0032] [0036-0039] [0052] i.e. figure 1 shows at least a communication link to transfer media stream or media quality information between the two devices; when there is packet loss or quality degradation, there is delay; this is especially true when the communication link is a wireless link, which is commonly known as a less stable transmission medium) **comprising: a first feedback device for receiving a packet of a media stream transmitted on the link, and transmitting information including a packet loss to a transmission source** (see Figure 1 Element 30/33/32, [0038] Line 4-8, [0039]). However, Mizutani et al do not teach that **the relay apparatus for connecting a communication link with a small delay and a communication link with a large delay, comprising: a first feedback device; adjusting means for adjusting passage of packets received from the network according to transmission capability of the communication link with a large delay; and a second feedback device for transmitting to the transmission source a acknowledge response about a packet transmitted through the adjusting means to the communication link.** Cheung et al from the same field of endeavor teach that **the relay apparatus for connecting a communication link with a small delay and a communication link with a large delay** (see Figures 3 and 7, Column 3 Line 26-45, Column 9 Line 30-38 i.e. a wired communication link is a link with small delay and a wireless communication link is a link with large delay), **comprising: a first feedback device** (see Figure 7 Element 837, Column 5 Line 46-67); **adjusting means for adjusting passage of packets received from the network according to transmission capability of the communication link with a large delay** (see Figures 3 and 5, Column 3 Line 26-45, Column 10 Line 65-67, Column 11 Line 1-8 46-61 i.e.

consider a scenario where the transmission capability of the communication link with a large delay, namely the wireless link, is better then the transmission capability of the communication link with a small delay, namely the wired link, for example, both sender and receiver are so close to each other in space and still connected to each other with a long wire; since the device is able to switch between the two communication links when needed, and the communication link present better transmission capability, it makes sense to switch the communication path of data packet to the wireless link); **and a second feedback device for transmitting to the transmission source a acknowledge response about a packet transmitted through the adjusting means to the communication link** (see Figure 7 Element 830, Column 9 Line 30-51).

At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement a dynamic communication link switching mechanism from Cheung et al to Mizutani's media streaming system. The rationale would have been that since the real time streaming is often delay sensitive, a dynamic communication link switching mechanism can provide a more robust transmission service without being restricted by the quality of different transmission medium.

Still regarding Claim 19, Mizutani et al and Cheung et al teach all the limitations except that **the first feedback device for receiving a packet of a media stream transmitted on the link to transmit information including a packet loss rate over a predetermined period to a transmission source.** Shimoyama et al from the same field of endeavor teach that **the first feedback device for receiving a packet of a media stream transmitted on the link to transmit information including a packet loss rate over a predetermined period to a**

**transmission source** (see Abstract, Column 3 Line 65-67, Column 4 Line 1-12). At the time of the invention, it would have been obvious to a person ordinary skill in the art to include the packet loss rate in a feedback message. The rationale would have been that since the sending end can provide better transmission service in respond to the packet loss information included in the feedback message.

Regarding Claim 20, Mizutani et al further teach that **the relay apparatus, wherein the second feedback device transmits to the transmission source a sequence number included in a header of the packet transmitted through the adjusting means to the communication link with a large delay** (see [0038] [0049]).

Regarding Claim 21, Mizutani et al teach that **a media streaming delivery system** (see Abstract), **comprising: a media delivery apparatus for transmitting a media stream in packets to a network according to a real time transfer protocol** (see Figure 1 Element 20/21, [0032-0033] [00441]); **a relay apparatus connected to the network for transmitting the media stream to a communication link with a large delay** (see Figure 1 Element 30, [0032] [0036-0039] [0052] i.e. figure 1 shows at least a communication link to transfer media stream or media quality information between the two devices; when there is packet loss or quality degradation, there is delay; this is especially true when the communication link is a wireless link, which is commonly known as a less stable transmission medium), **the relay apparatus comprising: a first feedback device for receiving a packet of a media stream transmitted on**

**the link, and transmitting information including a packet loss to a transmission source** (see Figure 1 Element 30/33/32, [0038] Line 4-8, [0039]). However, Mizutani et al do not teach that **the relay apparatus, comprising: a first feedback device; adjusting means for adjusting passage of packets received from the network according to transmission capability of the communication link with a large delay; and a second feedback device for transmitting to the transmission source a acknowledge response about a packet transmitted through the adjusting means to the communication link.** Cheung et al from the same field of endeavor teach that **the relay apparatus, comprising: a first feedback device** (see Figure 7 Element 837, Column 5 Line 46-67); **adjusting means for adjusting passage of packets received from the network according to transmission capability of the communication link with a large delay** (see Figures 3 and 5, Column 3 Line 26-45, Column 10 Line 65-67, Column 11 Line 1-8 46-61 i.e. consider a scenario where the transmission capability of the communication link with a large delay, namely the wireless link, is better then the transmission capability of the communication link with a small delay, namely the wired link, for example, both sender and receiver are so close to each other in space and still connected to each other with a long wire; since the device is able to switch between the two communication links when needed, and the communication link present better transmission capability, it makes sense to switch the communication path of data packet to the wireless link); **and a second feedback device for transmitting to the transmission source a acknowledge response about a packet transmitted through the adjusting means to the communication link** (see Figure 7 Element 830, Column 9 Line 30-51). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement a dynamic communication link switching mechanism from Cheung et al

to Mizutani's media streaming system. The rationale would have been that since the real time streaming is often delay sensitive, a dynamic communication link switching mechanism can provide a more robust transmission service without being restricted by the quality of different transmission medium.

Still regarding Claim 21, Mizutani et al and Cheung et al teach all the limitations except that **the first feedback device for receiving a packet of a media stream transmitted on the link to transmit information including a packet loss rate over a predetermined period to a transmission source**. Shimoyama et al from the same field of endeavor teach that **the first feedback device for receiving a packet of a media stream transmitted on the link to transmit information including a packet loss rate over a predetermined period to a transmission source** (see Abstract, Column 3 Line 65-67, Column 4 Line 1-12). At the time of the invention, it would have been obvious to a person ordinary skill in the art to include the packet loss rate in a feedback message. The rationale would have been that since the sending end can provide better transmission service in respond to the packet loss information included in the feedback message.

Regarding Claim 25, it is a method claim corresponding to the system claim 21, and therefore rejected under the same reason set forth in the same section of claim 21 in this paragraph.

17. Claims 22, 23, 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al, US Publication No. 20020138846, Cheung et al U.S. Patent No 5812531 and Shimoyama et al U.S. Patent No 6643496 as applied to claim 21 above, and further in view of Lee et al U.S. Patent No 7224702.

Regarding Claim 22, Mizutani et al, Cheung et al and Shimoyama et al teach all the limitations except that **the media stream delivery system, wherein the communication link with a large delay is a wireless link, and wherein the system is arranged such that, if a receiving buffer of a wireless terminal is large, retransmission is performed based on a acknowledge response from the wireless terminal** (see Abstract, Figures 10 and 12, Column 19 Line 63-67, Column 20 Line 1-34 i.e. obviously, if the buffer at the receiving end is big enough, retransmission can be performed without too much of consideration regarding amount of traffic being sent). At the time of the invention, it would have been obvious to a person ordinary skill in the art to perform retransmission if the buffer at the receiving end is big enough. The rationale would have been without too much restriction, lost data can be retransmitted in its full capacity.

Regarding Claim 23, Mizutani et al, Cheung et al and Shimoyama et al teach all the limitations except that **the delivery system according, wherein the communication link with a large delay is a wireless link, and wherein the system is arranged such that, if a receiving buffer of a wireless terminal is not large enough to accommodate retransmission from the media delivery apparatus, the relay apparatus transmits the media stream with an error**



**correction code added** (see Abstract, Figures 10 and 12, Column 19 Line 63-67, Column 20 Line 1-34). At the time of the invention, it would have been obvious to a person ordinary skill in the art to perform retransmission with error correction coded added if the buffer at the receiving end is not big enough. The rationale would have been with the help error correction coding, lost data can be retransmitted without requiring help of big data storage size, thus saving system resource.

Regarding Claim 24, Mizutani et al, Cheung et al and Shimoyama et al teach all the limitations except that **the delivery system, wherein the communication link with a large delay is a wireless link, and wherein the system is arranged such that, if a receiving buffer of a wireless terminal is small, the media delivery apparatus adds an error correction code to a media stream transmission on the communication link with a small delay** (see Abstract, Figures 10 and 12, Column 19 Line 63-67, Column 20 Line 1-34 i.e. obviously, with less retransmission, the data stream can be sent with less delay). At the time of the invention, it would have been obvious to a person ordinary skill in the art to perform retransmission with error correction coded added if the buffer at the receiving end is not big enough. The rationale would have been with the help error correction coding, lost data can be retransmitted without requiring help of big data storage size, thus saving system resource.

Regarding Claim 26, it is a method claim corresponding to the system claim 22, and therefore rejected under the same reason set forth in the same section of claim 22 in this paragraph.

### *Conclusion*

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Referring to the PTO Form 892, references are cited to show similar method and system of handling packet loss in a data stream communication environment.

19. Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

Application/Control Number:  
10/506,882  
Art Unit: 2616

Page 26

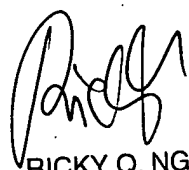
20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wei-po Kao whose telephone number is (571)270-3128. The examiner can normally be reached on Monday through Friday, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571)272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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